

Energy Issue

APR 15 1977

Carolina Country

April 1977



People

R. E. Jones, a pioneer with the North Carolina Agricultural Extension Service, retired recently after nearly 44 years with the organization. At the time of his retirement, he was an assistant director of the Extension Service and associate dean of agriculture at North Carolina A & T State University in Greensboro.



He was the first black to serve as an extension agent in Craven County, the first black to serve as an assistant director of the Extension Service, and the first black to serve on the national Extension Committee on Organization and Policy. Jones is a native of Warren County and a graduate of A & T and Cornell Universities.

The North Carolina Soybean Producers Association has presented distinguished service awards to **L. M. Dilday** of Belhaven and **Agriculture Commissioner Jim Graham**. The awards were presented at the association's annual meeting in Raleigh.

Louise Muse, member services representative for Tideland Electric Membership Corporation, Pantego, is one of 12 new members of the state Secondary Roads Council. Gov. Jim Hunt made the appointments to the body, which sets paying and construction priorities for the state's secondary roads system.

Frank and Lillian James of West Jefferson have been honored by the Rural Electrification Administration for their work with the National Telephone Cooperative Association. James is president of Skyline Telephone Membership Corporation in West Jefferson and the national association. The couple received the REA Certificate of Appreciation at the NTCA national convention in Houston.

Cecil Viverette, manager of Blue Ridge EMC, Lenoir, has been appointed to an Energy Conservation Committee of the National Rural Electric Cooperative Association, representing an 11-state region extending from North Carolina north to New England and west to West Virginia. The committee is to provide the national organization with guidance in the development and implementation of energy conservation programs.

Tom Ellis, superintendent of North Carolina's state park system, retired recently after spending most of his adult life working with the state's parks. He began his career as an area ranger in Bladen County in 1942 and remained with the system until his retirement, except for his World War II Army service. He had served as superintendent since 1961 and was assistant superintendent for six years prior to that.

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Fading Shades of Science Fiction

The idea of capturing the limitless energy of the sun has been stirring the imagination of Mankind for centuries. It's a romantic notion indeed, tinged with the aura of fantasy and science fiction.

But the idea is no longer an exotic concept from a never-never land of the future. It's being used today—across the nation and throughout North Carolina—for space and water heating in homes.

Such applications are quite limited at the moment because the very aura which makes solar energy so appealing also tends to discourage homeowners from seriously considering solar systems for their homes. It's an untried and little-understood technology which, until now, only the most adventurous have been willing to try.

The substantial investment required for these systems has also

discouraged their use, despite the fact that much of the investment can be recovered over a period of time in reduced fuel and electricity costs.

Editorials

Indications are that these costs will be coming down in the next few years and solar energy will become a more popular alternative to traditional energy sources for home heating and hot water. This trend should be encouraged by President Carter's continuing efforts to raise America's energy conservation consciousness.

Unfortunately, tapping solar energy to generate electricity is not yet a practical alternative to power derived from fossil fuels

and nuclear fission. It can be done, using mirrors or solar cells, but the costs involved are astronomical.

Electricity generated from solar energy through solar cells costs about \$15.50 per watt. To be competitive with conventional sources of power, this cost must be reduced to about 50 cents per watt. Many experts in the field believe this can be done through research and development—but that it cannot come before the late 1980s.

Best estimates are that major solar heating developments cannot be expected for another 15 years and that solar-based electric power could represent only about one per cent of the nation's total electric generation by the year 2000.

Related Stories, Pages 8—14

It seems obvious that solar energy will eventually play an important role in the world's energy future: where else can we find an energy source that's clean and non-controversial, using a fuel that's both free and available in infinite supply?

In those terms, it's still an image sketched in shades of science fiction. But those shades will someday fade from this scene, just as they did on another landscape — nearly eight years ago now — when Neil Armstrong took his historic "giant step for Mankind."

Consider the Source

Our energy resources are not inexhaustible, yet we are permitting waste in their use and production. In some instances, to achieve apparent economies today, future generations will be forced to carry the burden of unnecessarily high costs and to substitute inferior fuels for particular purposes.

Who do you suppose said that?

It sounds like a quote that might have been lifted off the front page of today's newspaper, doesn't it? It might easily have come from any number of sources in business, industry and government.

Its source was a government figure, but the story carrying this quote would have been datelined *Washington, Feb. 19, 1939.*

He was President Franklin D. Roosevelt.

Carolina Country

Read Monthly In More Than 260,000 Homes
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Official Publication — North Carolina Electric Membership Corporation

Robert N. Cleveland — General Manager & Executive Vice President

Owen Bishop — Editor

Spencer Carter — Associate Editor

Margaret Howell — Staff Writer

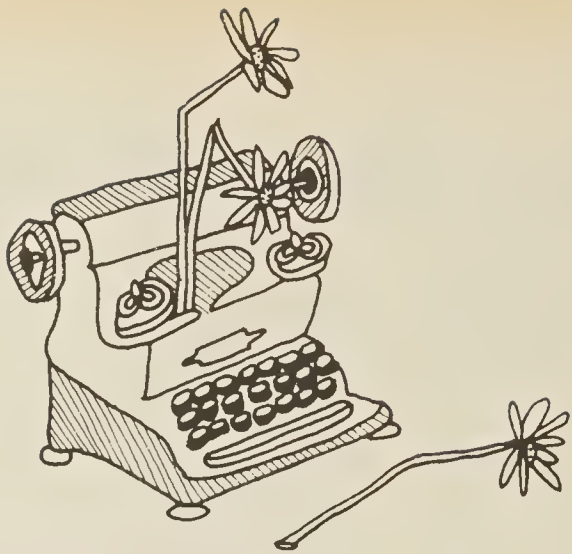
Milly Alford — Editorial Assistant

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In This Issue . . .

8 Summing Up Solar
20 Carolina Homemaker
24 An Annual Meeting Is . . .
29 Blowin' In The Wind

COVER—This drawing, symbolizing the theme of this special solar energy issue of *Carolina Country*, was originally prepared for *Illinois Rural Electric News* by that publication's staff artist Becky Matejka Wavering. We are indebted to the magazine's editor, Larry F. Elledge for making the art available to us.



rural electric Notebook

LOAN PROGRAM PLANNED

Rural electric cooperatives across the country would become agents for a new federal loan program to assist rural families with home insulation projects, under plans now being developed by the U.S. Department of Agriculture.

Agriculture Secretary Bob Bergland announced the new program March 1, saying it would provide loans of about \$500 each to finance home improvements that reduce energy usage. The loans would be repayable over a five-year period. He said the program could be in operation within 60 days.

Although details have yet to be completed, the program is envisioned as a joint effort by the Farmers Home Administration, the Rural Electrification Administration and local electric cooperatives. FmHA would provide the loans and the cooperatives would administer the program in their respective areas. The loans would be repayed with the borrowers' monthly electric bill payments. The interest rate on the loans is expected to be 8 per cent.

REA CHIEF KEEPS POST

Bergland also announced that a Republican who has served as administrator of the Rural Electrification Administration for the past eight years will remain in that post under the Carter administration. He is David A. Hamil, who's been asked to serve out the

final two years of a 10-year term which began in 1969. During the Eisenhower administration, he held the position from 1956 to 1960.

POWER SUPPLY FORECASTS

A report from the Federal Power Commission predicts that regional shortages of generating capacity and electric energy are "distinct possibilities" as early as 1979 -- due to the current political and economic climate.

The report concludes that despite the fact that additions to the nation's utility systems are theoretically adequate to meet power demands through 1980, it is "highly unlikely" that increased power capacity will come on line as planned because of pricing actions by OPEC nations, anticipated delays in nuclear plant construction, and new environmental standards delaying completion of coal-fired plants.

Meanwhile, the Congressional Budget Office reports that the nation may have to spend up to \$66 billion in developing new energy sources over the next decade and it will suffer hardships under any conceivable energy policy.

"Given present energy priorities, or even with some important changes, each alternative is expensive," the report said, adding that the era of cheap energy "on which Americans have predicated a lifestyle and workstyle" is over and not likely to return.



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J. K. STERN

Former: President, American Institute of Cooperation
Trustee, American Country Life Association



"The years have taught me that adequate insurance at minimum cost is as important to the folks in rural areas as is electricity . . . and in my opinion C.I.F. is dedicated to serving that need. For this reason more than anything else, I am happy to be on the board and to help in some measure to further the success of this program."

Ken Stern
C.I.F. Vice President, Director

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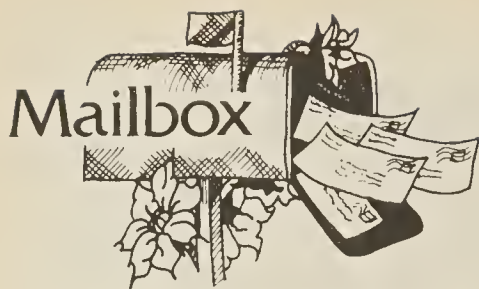
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Children
NC-4



I live in Jackson County—Canada community, just off 281 on Wolf Mountain Road. There's about 38 miles of unpaved roads in Canada that the school bus travels. These roads are unsafe for a school bus for they are narrow with steep embankments. There's mud two feet deep in the roads.

We have written the governor and the *Sylva Herald*. We have called every state official in the Highway Department informing them of this situation. Still nothing has been done. I wonder if anyone really cares that there are children's lives at stake. Or is it that no one really cares?

Irene Owen
Taskasegee

The above letter has been forwarded to North Carolina Secretary of Transportation Tom Bradshaw.

Today (Feb. 23) I received my December issue of *Carolina Country* in the mail. How very ironic that most of your letters to the editor were from postal employees saying what a good job they do in getting mail delivered on time. I could not help but be very amused at their defense of the postal service.

I enjoy your magazine very much even though I am no longer a resident of North Carolina. REA has always been a very important thing to our family since my father, James A. Ward, was so active in REA on local, state and national levels. I am a member of Four County EMC.

Peggy W. Rawheesee
Wilmington, Del.

The write-up by Margaret Howell is titled "Equal Rights: Unscrambling the Facts." It is quite evident that many facts need unscrambling. As one opposed to the ERA amendment, I would like to say that I am not opposed to equal rights for people but I am opposed to the word "equality" that is being so liberally used by politicians now.

It is quite evident that the majority of Americans have never seen the difference between the term "equal rights" and the word "equality." There are two kinds of equality—equality with the Devil and equality with Jesus

Christ. Some of us believe that the only equality man can grant is equality with the Devil. We believe that only God can grant "equality" with Jesus Christ. Since we have been given a hope of attaining the equality with Jesus Christ, can we afford to go back and accept one granted by politicians?

Lillian Esther Havner
Rt. 1, Carthage

I find it very interesting reading your magazine each month. You have a way of getting some important articles out to our REA members. I am sending the enclosed comments on the decline of the population of the cottontail rabbit because I feel it is very important to get this matter across to the people.

Like all the hunting seasons for the past five or 10 years, all the hunters I meet are wondering what has caused the decline in the cottontail rabbit population. I have been a hunter for 40 years and each year I am convinced more that the rabbit is in serious trouble. I hunt with a pack of Beagles four or five hours and feel very lucky to jump two rabbits. These hunts are in the same areas where they were very plentiful 20 years ago. I have 100 acres of land which I sow with wildlife strips and I haven't killed a rabbit on this land the last five years....

I fully agree food and cover are very important for the rabbit but I believe what we need most is scientific research to find the cause or causes of the rabbit depletion. The only way we will get this help is by a concentrated effort by all sportsmen to persuade our state governmental representatives to do something. It seems our State Wildlife Resource Commission has its greatest interest in larger game.

This is a problem for all hunters regardless of their favorite game. If we lose the rabbit species we lose the rabbit hunter who pays a big portion of the bill for our game management program. There are lots of rabbit hunters who buy hunting licenses and only go hunting once or twice a year....

My greatest joy as a hunter is listening to those hounds' music as they give chase, and watch them work at a check when the rabbit gives them some of it's wise tricks. Of course, I like to shoot a few rabbits to carry home and also give my friends.

Several people say they had rather have the gravy than the rabbit to eat. I know there are lots of man-made products in our country, but I don't know anyway to have rabbit gravy without first getting hold of that cottontail rabbit.

James A. Joyce
Stoneville

LOOK AT THESE NURSERY SPECIALS!

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	3-5'	2.89	2.79
DWARF APPLES			
Red Delicious, Yellow Delicious, Stayman Winesap, Yellow Transparent, Grimes Golden, Early Harvest.	2-3'	2.89	2.79
	3-5'	3.89	3.29
PEACH TREES			
Elberta, J. H. Hale, Hale Haven, Belle of Ga., Golden Jubilee, Red Haven, Dixie Red.	1-2'	.89	.79
	2-3'	1.39	1.29
	3-5'	2.19	1.99
DWARF PEACH TREES			
Elberta, J. H. Hale, Belle of Ga., Golden Jubilee.	2-3'	2.89	2.79
	3-5'	4.39	3.89
PLUMS			
Burbank, Methley, Santa Rosa, Damson, Purple Leaf.	2-3'	1.59	1.49
	3-5'	2.39	2.29
CHERRIES			
Early Richmond, Montmorency, Black Tartarian, Dwarf, North Star.	2-3'	2.89	2.79
	3-5'	4.39	4.29
PEARS			
Bartlett, Keifer, Orient, Moon Glow.	2-3'	2.39	2.09
	3-5'	3.39	3.09
GRAPES			
Concord, Niagara, Delaware, Fredonia.75	.59
APRICOTS			
Moonpark, Early Golden.	2-3'	1.59	1.49
	3-5'	2.89	2.79
SHADE TREES			
American Redbud, Pin Oak, Red Maple, Silver Maple, Sweet Gum, Sycamore, Tulip Poplar, Weeping Willow, White Dogwood, Lombardy Poplar.	3-5'	1.69	1.59
SHADE TREES			
Pink Dogwood, Sugar Maple.	3-5'	3.39	3.29
FLOWERING SHRUBS			
Spirea, Bush Honeysuckle, Forsythia, Mock Orange, Persian Lilac, Hydrangea, Althea, Weigela, Deutzia.	2-3'	.95	...
EVERGREENS			
(waxleaf)	8-12"	1.19	...
Burfordi Holly, Dwarf Burfordi Holly, Compacta Holly, Fosteri Holly, Hellerii Holly, Hetzi Holly, Needle Point Holly, Rotundafolia Holly, Juliana Barberry, Red Leaf Barberry, Leather Leaf Viburnum, Washington Hawthorne.			
EVERGREENS			
Pfitzer Juniper (spreading), Andorra Juniper (spreading) Hemlock, Taxus Spreading Yew, Nandina, White Spruce Pine, Boxwood, Baker Arborvitae, Irish Juniper.	8-12"	1.29	...
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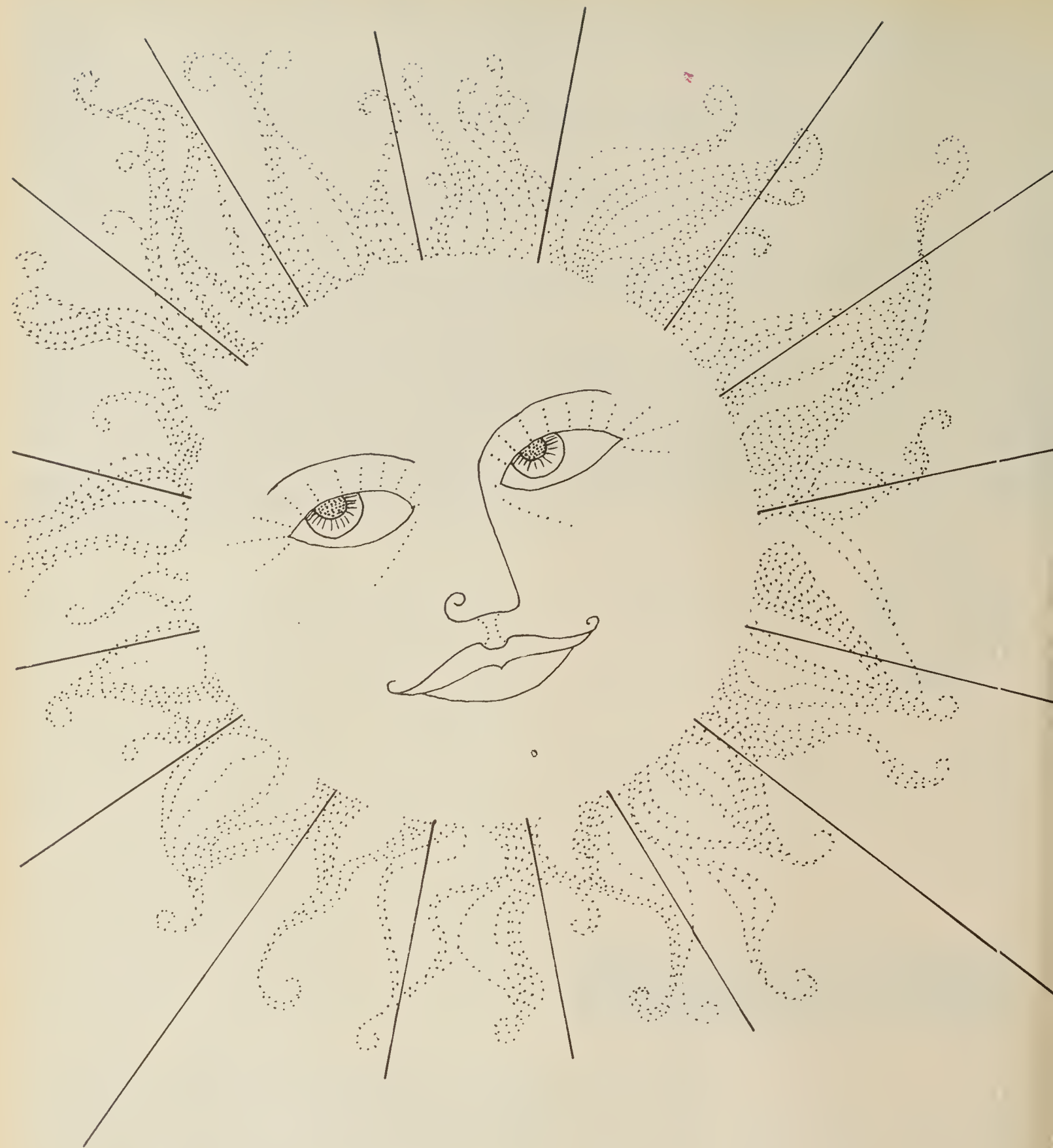
NAME _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____



Summing Up Solar

Harnessing the energy of the sun has become
a competitive option
for heating our homes and buildings.

*Busy old fool, unruly Sun
Why dost thou thus,
Through windows, and through
curtains call on us?
Must to thy motions lovers'
seasons run?*

When John Donne wrote the above verse almost 400 years ago, complaining about the sun disturbing his love life, using the sun as a weapon of war had probably preceeded his amorous poem by 16 centuries.

Make love, not war, Donne might have said. But according to legend, Archimedes saved Syracuse during the Second Punic War by lining up a thousand soldiers and using their highly polished shields to reflect the rays of the sun onto the sails of attacking Roman vessels. The sails, and the ships, were thus set on fire.

Whether that event really took place, we don't know. But we do know that the first solar patents were taken in the 19th century. A Frenchman who lived from 1740-1799, M. de Sausure, is credited with inventing the prototype of the modern solar collector, the device that is used for home and water heating. Solar radiation was used for distilling water in Chile in 1883, and solar ovens were in use in 1916.

Fifty Years Ago

Fifty years ago in Florida and the Southwest, solar water heating devices in the tens of thousands were sprouting up on roof tops. In the 1920's the solar water heating business was booming, but then a plentiful supply of cheap gas was discovered, and it became less costly and more convenient to heat water by burning gas.

The basic principle of heating with the sun is simple.

Leon Neal, an applications engineer with the N.C. Science and Technology Research Center, says "Solar is not a sophisticated technology."

"There's nothing magic about it or unknown. Most everybody knows that if you park a car in the sunshine, it gets hot inside."

Solar collectors work on the same principle. Most collectors are

of metal painted black. Placed in the sun, the metal plate gets hot. A piece of glass or transparent plastic over the plate retains the heat. Water is pumped through a small tube connected to the metal plate. The water is thereby heated and then stored in an insulated tank. Some systems use air rather than water as a heat-transfer vehicle.

Because the sun doesn't shine 24 hours a day, if heated air is the vehicle, it must also be stored in tanks containing fieldstones, gravel or sand. And even then, whether with water or air, there will be periods of extreme cold or protracted cloudy weather when an auxiliary heating system will be required.

Imaginative Methods

There are scores of other imaginative methods of harnessing the sun for heating. One of these is stacking large drums of water to form the wall of a home. When the sun heats the black drums of water, that heat is transferred into the home.

The "Helio Thermics" house, (see story on page 14) designed by a Greenville, S.C. company, uses the attic as the collector. Air heated in the attic by the sun is circulated throughout the home when needed, or stored in a rock pit under the house.

While the first solar houses were built in this country in 1938, one of the first steps toward cheaper solar heating was taken 15 years ago. Harry Thomason, a Washington, D. C. patent attorney discovered on a trip to a North Carolina farm that rain water dripping from a shed's corrugated tin roof was warm. He applied the principle in 1959 to a house he built in Maryland. The south-sloping roof was covered with corrugated black aluminum.

Trickling Water

A galvanized-iron pipe ran along the apex and holes drilled in the pipe allowed a trickle of water to run down the troughs formed by the corrugations. When the sun shined, the result was hot, steaming water. Thomason said his oil bill for the first three years he lived in the house was \$18.45. After

the success of his first home, he built two others, and licensed several contractors around the country to use his patented system.

Aside from heating water and air, the sun can also be used to generate electricity. But it's an expensive proposition.

The least expensive way to do it, is to use heliostats—mirrors mounted on pedestals that follow the path of the sun with the help of computers, and direct the concentrated rays of the sun onto a central steam boiler.

Mounted atop a tower are coils that are heated to hundreds of degrees. Water flowing through them boils and turns to steam which drives a turbine that generates electricity.

In Albuquerque, New Mexico, the Energy Research and Development Administration is assisting in the construction of a five-megawatt, \$21 million solar thermal test facility using heliostats. More than 300 mirrors will be used to generate approximately 1.5 megawatts of electricity. An even larger 10-megawatt facility is on the drawing board. It will be financed by the federal government and three Arizona utilities.

Photovoltaics

Another method of converting the sun's rays into electricity is with the use of photovoltaics — solar cells, usually of silicone, that when struck by the sun, conduct electricity. They work, and work well, according to authorities in the field. NASA uses them to furnish the electric power needed by spacecraft. But they are incredibly expensive. At today's cost of \$15.50 a watt, it would take cells valued at \$1,550, sitting in the noonday sun, to produce enough electricity to light a 100-watt bulb.

This cost would have to be reduced to 50¢ per generated-watt to be competitive with conventional sources of electricity. Some experts predict that by the late 1980's, the cost can be reduced to 50 cents or even 30 cents a watt. Others say it can't be done.

(continued on page 10)

(continued from page 9)

But most experts agree that any significant solar generation of electricity is in the distant future, estimating that 50 years will pass before solar will make any inroads into the coal-nuclear mix of electric generation.

But solar heating and cooling can reduce the need to use other energy sources for comfort conditioning, including electricity, and thereby reducing demand on future electric generating facilities.

City System

The city of Santa Clara, California, which operates its own municipal utility system, has a plan to install solar heating units in local homes, apartments and businesses. They want to use capital investment to operate a city owned solar utility, where the city would finance and install solar heating and cooling systems in new buildings and consumers would pay a monthly fee to cover depreciation and maintenance of the solar units.

Obviously, such a plan could be used anywhere in the country where there is a publicly-owned utility, in cities or in rural areas.

Rural Advantage

According to engineer Neal, rural areas are particularly suited to the use of solar comfort conditioning.

"There's an advantage in a rural home that's not there in a suburban home," he says, "because there, in a rural setting you have plenty of space around you (where trees will not interfere with the sun). For another, you've got plenty of wood available that could be used for back-up heating when you have a period of several days of overcast weather."

As the demand for solar hardware increases, and manufacturers tool up for mass production, the cost of a solar heating system is declining. Right now it is competitive with electric resistance heating, and it's

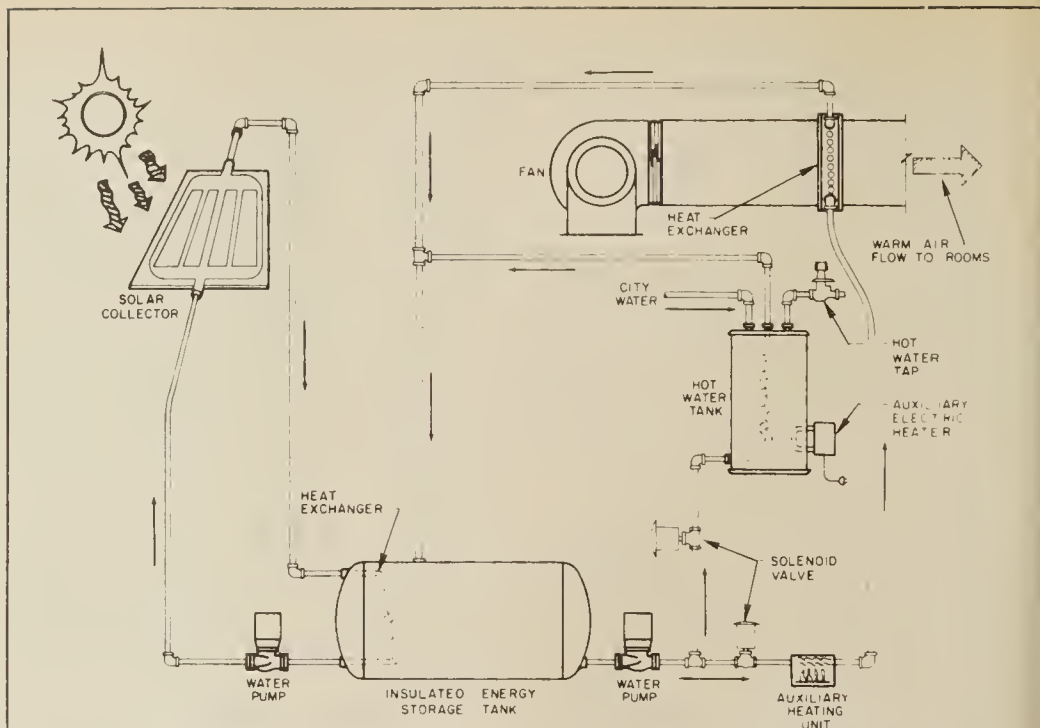


Figure 1. Schematic Diagram of a Solar Heating and Hot Water System.

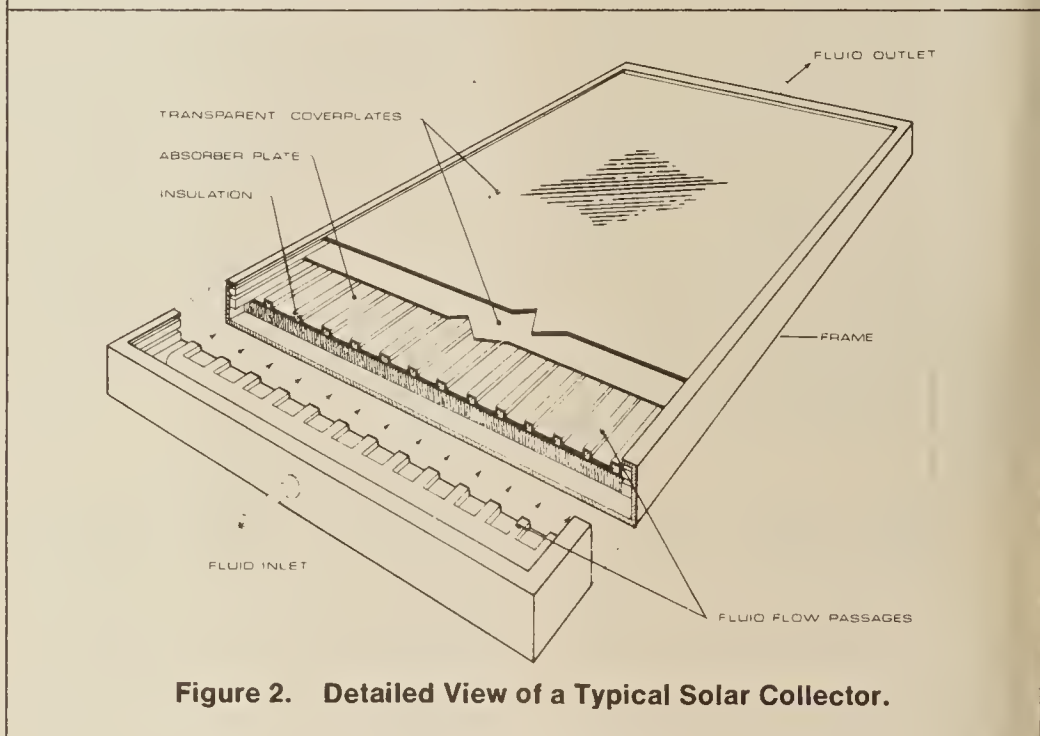


Figure 2. Detailed View of a Typical Solar Collector.

expected to be competitive with other energy sources in the near future.

Neal says solar has "reached the stage where it is really a viable energy alternative and an economic one in many instances. But we have to have nuclear power and we have to conserve energy. We can do more over the next 30 or 40 years by saving energy than we can by developing solar as hard as we could go. But we also need

solar. Our fossil fuels are no unlimited.

"Experts will argue about how long it'll be before we run out of natural gas," Neal says, "but nobody argues that we're going to run out. The same is true with coal or with uranium for nuclear. Solar is one of the sources that we're just not going to run out of."

—Spencer Carter—

Solar Activities in the Tar Heel State

Interest in Solar is on the upswing.

The Tar Heel state could never measure up to a Florida or Arizona as a land of sunshine, but it does have its share of sunny weather—more than enough, in fact, for the economical use of solar power.

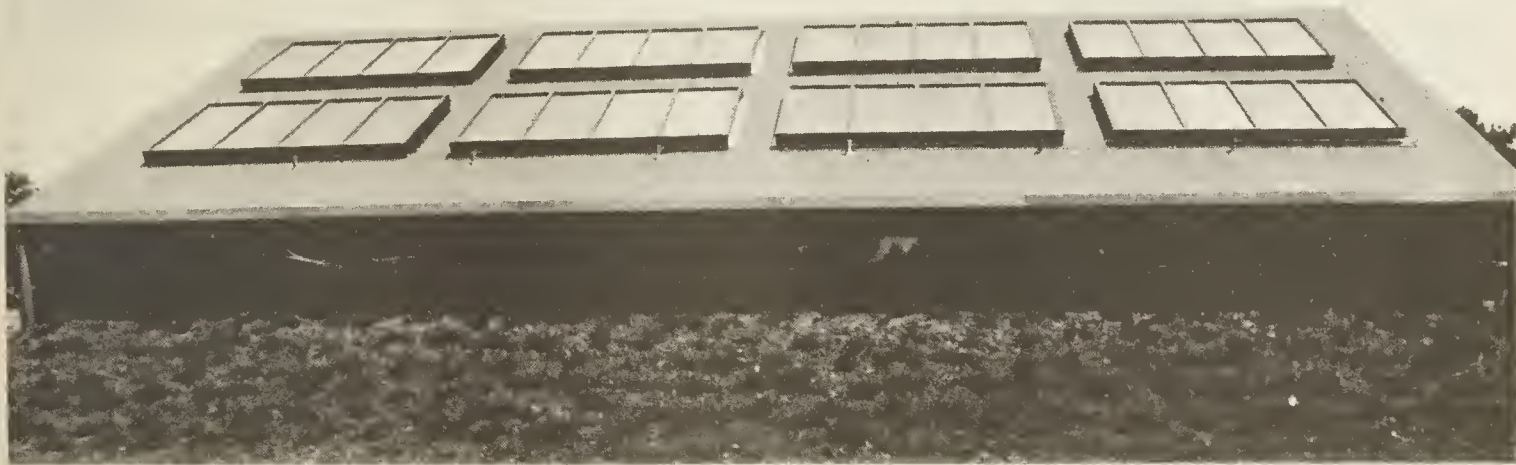
The climate is varied: The average temperature at Southport on the southern coast is nearly as high as that of interior Northern Florida, while the average atop Mount Mitchell is lower than that of Buffalo, New York.

And the state has the rainiest part of the eastern United States (near Brevard) and the driest

place south of Virginia and east of the Mississippi (French Broad Valley, which is only 50 miles north of the rainiest place).

But even with such climatological variety, **every area** of the state could tap solar energy for space and hot water heating. Experts say from 70 to 75 per cent

(continued on page 12)



The solar-heated Bladenboro Community Health Center is a major source of pride for the 2,100 residents of that eastern North Carolina town.

It was designed by architect Arnold Aho, a former member of the faculty at the N.C. State University School of Design who is now with Mississippi State University. Aho used freon rather than water in the solar system because, he says, when freon is converted from a liquid to a gas by the sun's heat, it can carry more BTU's of heat than water, plus it does not corrode or freeze.

Soil mounds, called "berms," help to insulate the 3,500-square-foot health center. In North Carolina, the ground maintains a constant temperature of about 58° F eight to ten feet underground, so the five-foot-high berms help maintain a constant temperature and should mean less cooling in summer and less heating in winter.

A federal grant supplied \$72,000 toward

construction costs for the \$121,500 building and the people of Bladenboro worked hard to supply a portion of the remainder. The town raised over \$3,700 by holding a fish fry, where 700 pounds of fish were consumed.

Enthusiasm for the health center was such that when people were asked to send over their dump trucks to carry fill dirt to the construction site, so many sent trucks that some were not needed.

The center is now operating with family nurse practitioners while the search for a doctor continues. That search received a needed boost recently as a result of national television coverage of the unusual building.

Inquiries are now coming in about the facility from doctors across the country, and the people of Bladenboro are hopeful that one of those inquiries may eventually lead to a commitment for the center's first full-time, permanent doctor.

(continued from page 11)

of the state's heating needs could come from the sun.

The cost of such heating systems in our state can range from \$2,000 to \$15,000 for a 1,500-square-foot home. Homes in sunny coastal areas can get by with smaller systems, while Mother Nature places a heavier burden on those in Piedmont and Mountain areas. Solar industry leaders expect that demand for solar heating hardware and resultant mass production will lower those costs. But even at today's high cost, solar heating will save many homeowners money in the long run—especially

those presently heating their homes with electric furnaces or baseboard heaters. Before rushing out to buy a solar system, however, first make sure your home is fully insulated and weather proofed.

While there are relatively few solar heated homes scattered throughout North Carolina at present, interest is on the upswing.

The Department of Housing and Urban Development has awarded \$250,000 to the Durham Housing Authority to provide solar hot water, heating, and cooling for 18 single-family attached dwellings. A solar subdivision in Raleigh is in the planning stage.

There is also interest in industrial applications such as textiles, where dye houses need heat year round. When solar heating can be used throughout the year, it becomes more economically feasible, since it isn't sitting idle during the warm months.

Institutional buildings are also getting into the picture. A solar medical center in Bladenboro has been completed (see story on page 11). And the state's first solar-heated school is scheduled for completion next fall in Goldsboro. The elementary school will be built in a "V" shape, will use 90 solar panels, and will cost \$2.2 million. A junior high school in Charlotte that will employ solar is also in the planning stage. And industry in the state is looking hard at solar as a potential answer to the energy crisis.

In fact, the manufacture, installation, design and distribution of solar hardware is a rapidly growing industry itself. Solar industries are located in such diverse areas as Belmont, Salisbury, Statesville, Forest City, Winston-Salem, Rocky Mount and Gastonia.

A Solar Greenhouse at Banner Elk!

One of these, Independent Energy Systems, designed and built a solar greenhouse at the seemingly unlikely area of frigid Banner Elk. Solar energy supplies about 30 per cent of the heating requirements of the greenhouse.

Meanwhile, an ancient industry is expected to experience a major boost from technological developments in the solar energy field—the production of mirrors. This has important implications for North Carolina since more mirrors are made in the state than anywhere else in the world.

Experts say mirrors are going to be in big demand, for they are



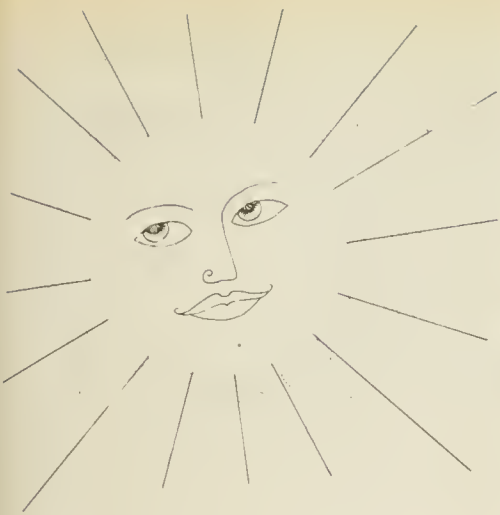
Dr. Barney Huang's solar barn may be a partial answer to the high cost of curing tobacco.

During tests over the last two seasons at N.C. State University, the barn saved from 35 to 40 per cent in fuel requirements compared to conventional bulk curing barns. And Huang believes that savings of up to 50 per cent can be achieved with further refinements.

The fiberglass barn is converted to a greenhouse during non-curing periods and saves about 20 per cent over conventional greenhouses because of its heat and storage system.

This summer a large version of the experimental barn will be constructed, with a capacity of 50 per cent more tobacco than conventional barns, using three rooms rather than the standard two.

Huang estimates that the commercial cost of his larger barn would be about \$11,500, compared to about \$9,000 for smaller conventional barns, meaning the solar barn would cost less to purchase than a conventional type on a pound-per-pound production basis.



used in one very important method of harnessing the sun to generate electricity. Mounted on computer-activated motors, mirrors track the sun, focusing the sun's rays on a steam boiler mounted atop a high tower. The steam produced turns a turbine which powers an electric generator. Three Arizona utilities are now finalizing plans to construct a "power tower" facility that will produce 10 megawatts, or enough electric power for more than 6,000 homes.

The bulk of the mirrors for this, and other such projects, will most likely come from the Tar Heel state. Gardner Mirrors in North Wilkesboro has provided mirrors for power towers in New Mexico and France, and has been involved in perfecting improved mirrors for such applications for six years.

Five of the nation's 12 major mirror manufacturers are in North Carolina. A spokesman for Gardner Mirrors said that in three years he thinks "it'll take every manufacturer in the state to meet the demand" from solar technology.

Research in solar technology is underway in the state's universities and technical schools, although research projects are not numerous.

One experiment, involving the solar curing of tobacco, is being conducted at N.C. State University. (See story on page 12.) During a test in 1975, a test barn saved 37 per cent in fuel. During non-curing times of the year, the

(continued on page 14)

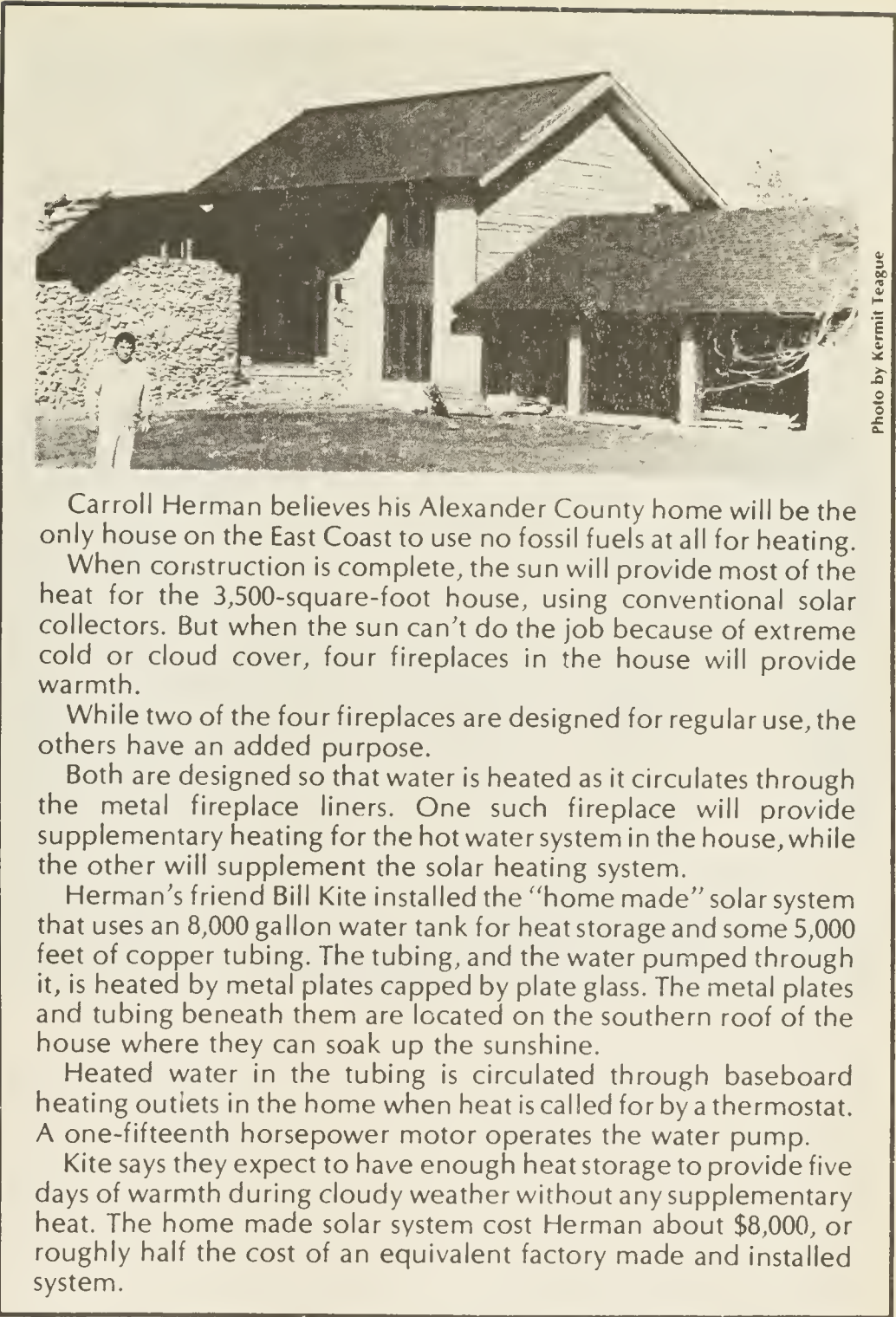


Photo by Kermit Teague

Carroll Herman believes his Alexander County home will be the only house on the East Coast to use no fossil fuels at all for heating.

When construction is complete, the sun will provide most of the heat for the 3,500-square-foot house, using conventional solar collectors. But when the sun can't do the job because of extreme cold or cloud cover, four fireplaces in the house will provide warmth.

While two of the four fireplaces are designed for regular use, the others have an added purpose.

Both are designed so that water is heated as it circulates through the metal fireplace liners. One such fireplace will provide supplementary heating for the hot water system in the house, while the other will supplement the solar heating system.

Herman's friend Bill Kite installed the "home made" solar system that uses an 8,000 gallon water tank for heat storage and some 5,000 feet of copper tubing. The tubing, and the water pumped through it, is heated by metal plates capped by plate glass. The metal plates and tubing beneath them are located on the southern roof of the house where they can soak up the sunshine.

Heated water in the tubing is circulated through baseboard heating outlets in the home when heat is called for by a thermostat. A one-fifteenth horsepower motor operates the water pump.

Kite says they expect to have enough heat storage to provide five days of warmth during cloudy weather without any supplementary heat. The home made solar system cost Herman about \$8,000, or roughly half the cost of an equivalent factory made and installed system.

More Solar Information

Further information on solar water heating can be obtained from the Industrial Extension Service of the N.C. State School of Engineering or the Energy Division of the Department of Military and Veterans Affairs, 215 E. Lane St., Raleigh, N.C. 27611.

Other sources that can help with answering any specific questions you have have about the various types of solar energy systems and applications, are the U. S. Energy Research and Development Administration, Division of Solar Energy, Washington, D. C., and the two major solar industry trade associations—the Solar Energy Institute, P. O. Box 9352, Washington, D. C. 20005; and the Solar Energy Industries Association, 1001 Connecticut Ave., N.W., Suite 632, Washington, D. C. 20036.

(continued from page 13)

fiberglass barn can be used as a greenhouse, economically justifying the additional \$5,000 purchase price over a conventional barn.

While state government has no central office to work with solar energy, there has been some activity in that area. The Conservation section of the

Energy Office, the State Education Department, the Governor's Office and the North Carolina Science and Technology Committee—all have some involvement with solar power.

A subcommittee of the Energy Policy Council has discussed tax incentives for solar use. And the Utilities Commission has ordered electric power companies to

devise rates that do not penalize solar users.

Experts say it is possible that solar energy could account for as much as one per cent of the electricity generated in this country by the year 2000. But for home and water heating purposes, solar is important and currently available—for North Carolina and the rest of the nation.



Randy, Mike and Larry Granger have designed what they believe is a better mousetrap to capture the sun's energy. It's called the Helio Thermics house.

The three brothers, who live in Greenville, S. C., built a model of their "better" solar heating design, using information supplied by the U.S. Department of Agriculture. And they did it, so to speak, in their own backyard—without fancy research labs or big money grants.

What's better about the Helio Thermics house is that it doesn't use conventional (and expensive) solar collectors. The attic of the house serves as a collector. Corrugated fiberglass panels allow the sun's heat to reach inside the attic to a plywood floor and wall painted flat black. Heated air in the attic is blown into the living area of the home if it is needed, or it is stored in a rock pit under the

home for later use. An electronic control unit determines where the air will be sent.

Supplementary heating for those stretches of dense cloud cover is furnished by an ordinary gas quick-recovery water heater. The hot water is fed into a radiator-like device called a heat exchanger. Warmed air, produced by air passing around the heat exchanger's coils, is then distributed throughout the house.

Costs about \$4,000 more than a conventional gas or electric heated home

Water returned from the exchanger is still hot enough (130 degrees) to be piped into the dwelling's plumbing for ordinary hot water use. "Free" hot water is also supplied by copper tubing, painted black, and laid out on the attic's floor. The tubing is

connected to a conventional water heater with the heating element removed. A large part of all the winter time hot water needed is furnished this way.

When warm weather arrives, vents along the ridge of the attic's roof and immediately under its eaves, are opened. The hotter the air in the attic, the faster it rises out through the ridge vents and the more it draws cool air in through the openings under the eaves. U.S. Department of Agriculture tests have shown that this flow of air can keep summer temperatures in the loft as much as 40 degrees Fahrenheit cooler than other conventional attics in the same neighborhood. The cooler attic serves to keep the living area below cooler.

Another plus is that a Helio Thermics home costs only about \$4,000 more than a conventional gas or electric heated home. At projected fuel savings of \$35 per month, based on today's cost of fuel, would cover the additional investment in less than ten years. And of course, the cost of fuel is constantly going up.

Secondly, it is among the very

first — possibly the first — solar home to qualify for both FHA and VA mortgage insurance.

One Helio-Thermics home has been built in North Carolina—in Arden, a community near Asheville. And another will soon be erected in Butner.

Plant Now...Step Back...and Watch Out! Amazing Super-Growing Species Soars Into A Magnificent Tree IN JUST ONE YEAR!

And if you think that's startling — just wait 'til you see the spectacular show when it starts to flower — Actually smothers itself in such lavish masses of bouquets, its branches appear to bend from the sheer mass and weight of the magnificent blooms.

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READ WHAT THE EXPERTS SAY ABOUT THE INCREDIBLE PAULOWNIA . . . THE FASTEST GROWING FLOWERING SHADE TREE EVER DISCOVERED!

HEIGHT: Plant Scientists and Government Experts report a growth rate of 15 to 18 feet under less than optimum conditions and even as much as 18 to 22 feet of growth the very first year on specimen trees.

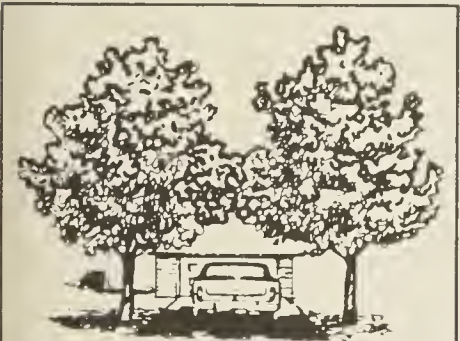
That's more growth IN JUST ONE SINGLE SEASON than even a fully matured 15-year-old flowering dogwood, or prize star magnolia.

SPREAD: University researchers report beautiful ornamental spread of nearly 35 feet at maturity . . . packed with thousands of magnificent flowers. Think of it! It not only surges skyward in the most spectacular burst of beauty you've ever seen . . . but, also arches out in a magazine-cover display of color-drenched branches.

EASE: Leading editors report: . . . grows in almost any soil . . . and below-zero root-hardy, too. Yes, because nature has endowed this landscape-artist's "dream-tree" with super-growing strength . . . because it is virtually resistant to most every common disease . . . requires practically no care at all. You simply plant it and forget it . . . it's as simple as that

A TOWER OF BEAUTY IN JUST ONE SINGLE YEAR!

Yes, who says you have to spend a small fortune for a flowering shade tree? — and then spend half a life-



How's this for a natural archway in front of your driveway — twin towers of flowering beauty in less time than you ever dreamed possible.

VITAL STATISTICS FROM LEADING EXPERTS

MATURE GROWTH SIZE — 40 to 45 feet

MATURE GROWTH SPREAD — 30 to 35 feet

ZONE OF HARDINESS — completely root-hardy from deepest south to as far north as Montreal, Canada. In areas where the temperature drops below —12°F the tree must be pruned to ground level and is recommended for use as an ornamental shrub.

ONE-YEAR GROWTH RATE — Experts report growth range of up to 22 feet the first year after planting specimen trees under optimum conditions, up to 13 to 15 feet under poorer conditions when pruned for foliage growth only.

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TAKES BUT 10 MINUTES TO PLANT — REWARDS YOU WITH A LIFETIME OF BEAUTY STARTING THIS VERY YEAR!

time waiting for it to grow? It used to be that way — BUT NOT ANY LONGER. Not since we have finally tracked down the one single tree in all of nature that hoists itself high, so fast you can literally measure the difference in both height and spread from week to week . . . or take a yardstick and measure the incredible difference in feet from month to month!

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Picture your patio bathed in the cool, fragrant beauty of this show-stopping miracle-tree from early spring to the first snows of winter.

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Now, the price of this super-growing shade tree is not \$20 or \$30 but a mere \$3.95 . . . yes, only \$3.95 for this magnificent shade tree that rewards you with such a glorious display of growth IN JUST ONE SINGLE YEAR!

However, supplies are going fast. All orders filled on a first-come, first-shipped basis. You must act now!



Here's a luxury sight you don't have to wait half a lifetime growing — a matched pair of flowering showpieces, so strong and sturdy you can actually sling a hammock between them.

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Illustration depicts magnificent size, spread and beauty of mature Royal Paulownia (Paulownia tomentosa).

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As I walked into the old building, I could almost literally detect that smell—the clean aroma of green coffee beans.

It had been nearly fifty years since I had entered this old building, which had once been my grandfather's country grocery store—the one I used to visit so much in my boyhood. Nostalgia had guided me on this sentimental journey to the farm which had once belonged to Grandpa and to the building, now used as a storehouse, that was once his store.

I remembered it so well. The structure with its high ceiling and sturdy cross beams overhead remained much the same as when I last was there. The wooden counters were still intact and some shelves remained around the walls.

My mind flashed back to the happy hours spent in this country grocery with my grandfather.

Sometimes Grandpa would let me “clerk.” On crisp autumn days, the pot bellied stove glowed red as tobacco-chewing customers sat on the sand boxes on each side and swapped yarns. There were always hams (cured in Grandpa's smokehouse) hanging from those overhead beams. I remembered too, the stacks of fat back and other salted meats on the counters beneath the swinging hams.

Glancing into one of the corners, I could still see, in my mind's eye, the barrels of sugar, flour, lard, and green coffee. Behind the barrels, ears of colorful Indian corn were always hanging on the wall, ready for popping around the fireplaces of rural homes. What a difference from the present day prepackaging of all of these commodities!

I remembered the counters with the showcase containing my favorite peppermint and horehound stick candies, as well as the delicious chocolate drops. My father smoked Piedmont cigarettes which carried a coupon—and my purchasing power for the candy was usually my accumulation of these coupons! (They were probably the forerunner of the trading stamps of today.)

Looking into another corner, I could imagine again the barrel of salt herring that was always

there. After an overnight soaking to extract part of the salt, they made a delicious breakfast item. Over on another counter I pictured the boxes of dried apples and peaches. Oh what delectable pies they made!

GRANDPA'S COUNTRY STORE

By Richard Elmore

One of my favorite pastimes was to have a real treat in the store for lunch rather than going to the house. There was the cracker barrel and the hoop of sharp cheese. A slice of cheese with crackers, sardines and beans made a good meal. For a drink I would go over to the ice box for a soda pop. The drinks were kept cold by ice taken from Grandpa's deep ice house. The ice was cut from his pond during the cold winter months. Stored in the deep ice house and covered with straw, it did not melt during the warmer months. For dessert I would go to the ginger snap box. If it was summertime, Grandma might have used some of the stored ice to make a freezer of ice cream and brought it down.

Although Grandpa's store was mainly for groceries and staples, there just had to be a section

to contain the kegs of horseshoes and various size nails. On the wall in this area, a rack displayed buggy whips!

I remembered the basket containing eggs brought and bartered by customers for their needs, perhaps for the canned goods neatly stacked on the shelves or maybe for the whole nutmegs and other spices carried in the glass jars on the counter. In the rear of the store there were hung the fur pelts of mink, otter, and fox brought in for trade or purchase.

To complete my visit I stepped out of the back door. There, under the building, was the old United Fairbanks scale. I could still remember it on the counter near the barrels of staples and the hoop of cheese, where the purchases were carefully weighed.

I walked around the store to the front and got into my parked car. As I drove back into the world of the seventies, my mind still lingered in the memories of long-gone, peaceful days, brought back to me by my visit to Grandpa's country store:



Richard Elmore is a Charlotte free-lance writer.



By Bruce Roberts

These outstanding photographs by noted North Carolina photographer Bruce Roberts are featured in the 1977 Spring and Summer edition of the events calendar "Down The Road Apiece," published by North Carolina's EMCs. Copies are available without cost at most EMC offices or may be ordered by using the coupon order form on Page 2.

The theme of the calendar is illustrated by the photo at right of a mountain man and his mules, headed "down the road apiece." The others, moving clockwise, draw attention to The Hang Gliding Spectacular at Nags Head in May, bottom right; crafts fairs in July, bottom left; the Dogwood Festival at Statesville in April, below; Winston-Salem's Moravian Easter Sunrise Service in April, above; and the National Hollerin' Contest at Spivey's Corner in June, above right.

Roberts and his wife, Nancy, are co-authors of NORTH CAROLINA - THE GOODLIEST LAND, GHOSTS OF THE WILD WEST, AMERICA'S MOST HAUNTED PLACES and THE FACES OF SOUTH CAROLINA.



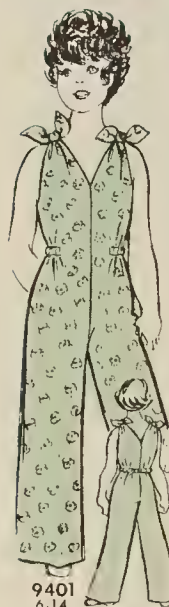
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Country Kitchen



SORGHUM MUFFINS

Clay County resident Lynette Clay writes that her "Sorghum Muffins" are "very nutritious, not to mention their tasty flavor."

She also reminds us that they won't rise as much as muffins made with baking powder, but they'll have a rich, dense texture." Sounds to us that they might be a perfect take-along for one of those long-awaited picnics.

If you would like to share a recipe with this column, send it to: Country Kitchen, P.O. Box 27306, Raleigh, N.C. 27611. We pay \$5 for published recipes.

COUNTRY KITCHEN RECIPE

Submitted by Lynette Culp of Hayesville, N.C.

SORGHUM MUFFINS

- | | |
|-----------------------|--------------------------------------|
| 1 Tbsp. yeast | ½ tsp. salt |
| 1 c. lukewarm water | ¼ tsp. grated orange rind (optional) |
| ½ c. sorghum molasses | 2 c. whole wheat flour |
| ¼ c. oil | |

2 Tbsp. sesame (or sunflower) seeds

Dissolve the active dry yeast in lukewarm water. Let it sit for about five minutes until the yeast "blooms." Mix in molasses, oil (peanut oil is best) and salt. You may also add grated orange rind, if desired. In another bowl, place whole wheat flour and sesame or sunflower seeds. Pour the liquid mixture over the flour and seed mixture and stir enough to dampen the flour. Fill oiled muffin cups about two-thirds full, and let rise 10 minutes in a warm place. Bake at 325 degrees for about 30 minutes (or until done—use straw test). Makes 12 muffins.

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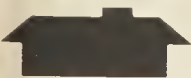


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Salt Secret

Until about the 18th century, the rank of guests at a banquet was indicated by where they were seated with reference to the massive silver salt cellar that was always placed at the center of the table. At the head of the table, "above the salt," sat the host and his most distinguished guests. The less noble were seated "below the salt," farthest from the host.

It is still an honor to be seated at the head of the table. But these "salt secrets" are intended to make you a better all-around housekeeper, not just a more fascinating dinner partner. So here we go on a room-by-room tour of ways salt can spice up your housekeeping.

Living Room

CARPETS: Help restore colors with the aid of a wet cloth dipped in a half-and-half solution of salt and plain water. And when placing new wool rugs, remember that moths don't like salt. Secret is to scrub the floor with a strong solution of hot water and salt just before laying the carpet.

FIREPLACES: Another salt secret makes fireplaces work better and more safely. Get a roaring fire going, then throw in a handful of salt. Enjoy the pretty yellow flames while the salt cleans out accumulated soot and helps prevent dangerous chimney fires. It's a double secret!

WALLS: Is there a hole in the wall where you took down the picture of Aunt Minnie? Don't despair—repair! Mix equal amounts of salt and starch with just enough water to make a plaster-like paste. Holes will be covered and even Aunt Minnie won't know your salt secret.

GOLDFISH: Occasionally put a teaspoon of plain salt in a quart of water at room temperature and put your goldfish in. Let them swim around for about 15 minutes, then return them to their own tank. Keeps them healthy.

Dining Room

TABLE RINGS: It's no secret that wet or hot dishes or glasses leave white rings on tables. Here's a secret for removing them: Make a thin paste of salad oil and salt (about equal proportions). Rub it on

the spot with your fingers, let it stand an hour or two, then rub off. The rings should vanish.

FOOD ON DINING ROOM CARPET? Grease spots on rugs can sometimes be banished with a solution of one part salt and four parts alcohol. Rub the spot hard.

FLOWERS AND VASES: That centerpiece bouquet will keep longer if you put a little salt in the bowl or vase with the water. You can clean a deep vase by pouring in a salt-vinegar solution. Let it stand a while, then give a good shake and a quick rinse with clean water. Arrange artificial flowers artistically by placing in a bed of moistened salt. As the salt dries out, it will solidify to hold the flowers in place.

Kitchen

CHEESES: Mold thrives on cheese, even those you don't like moldy. To prevent mold, wrap cheese in a cloth dampened with salt water before refrigerating.

BOILING WATER: No, we're not going to tell you how to boil water. But salt is a heat conductor. So try salting the water in the bottom of a double boiler to make food in the pan above cook faster.

ANT-PROOFER: Don't let ants have a picnic inside your home. Salt will keep them off kitchen floors and counter tops. The secret is to sprinkle salt along baseboards and in corners of counter bases.

REFRIGERATORS: Salt and soda water cleans and sweetens the inside of your refrigerator. And won't scratch the enamel as stronger cleaners sometimes do.

EGG DISHES: Salt makes eggs taste better, and "eggy" dishes clean easier. Sprinkle salt on dishes right after breakfast; it makes them a whiz to clean when you have time.

GREASY PANS: The greasiest iron pan will wash easily if you put a little salt in and wipe with paper. And a brisk scouring with table salt will remove the most stubborn tea stains from cups.

OVEN CLEANER: Would you believe salt and cinnamon? Not a taste treat, but

For the House

a dandy over refresher. Salt and cinnamon take the “burned food” smell away. Sprinkle spills while the oven is still hot. When dried, remove the salt spots with a stiff brush or cloth.

FOOD BURNING?: Grab the everhandy salt when food or grease flare up on the stove. **Never use water.** The salt will smother flames.

SALT SWEETENERS: Believe it or not, salt can “sweeten” thermos bottles, decanters and other closed containers...Strong-flavored vegetables are milder if soaked for 2 or 3 minutes in boiling water (then rinse and cook with the seasoning you prefer) . . . Poultry tastes better if rubbed inside and out with salt before roasting. . .

Chase bitterness from percolators by filling with water and adding 4 tablespoons of salt; perk as usual and then rinse for a clean pot . . . And sweeten breath after eating onions by biting into a slice or two of well-salted lemon . . . Remove onion odor and fruit and vegetable stains from hands with salt, too.

SALT FOR GOURMETS: Crisp salads by adding salt immediately before serving . . . If you’ve been too generous adding salt to soup, slice a raw potato or two into the pot to absorb the salt (retrieve the potato and use it another way) . . . Rub the pancake griddle with a small bag filled with salt to prevent sticking and smoking . . . Use the same trick when cooking fish by sprinkling a little salt in the skillet before cooking.

ALL-AROUND COOKING: Use a strong salt brine in the kitchen sink drain regularly to eliminate odors and keep grease from clogging the drain. . . Rub unpainted breadboards and cutting boards with a cloth dipped in salt after they have been washed with soap and water; they’ll look lighter and brighter . . . New brooms wear longer when soaked in hot salt water . . . And you can give sponges new life by soaking them in cold salt water after they are washed.

BEAUTY TREATMENT: Many famous beauties use salt with olive oil for a stimulating facial. Mixed in a paste, the

friction of the salt and lubrication of the oil give tone to tired or over-tanned skin.

SALT BATHS: Before bathing, massage dampened skin with salt to help relax tension. And, of course, tired feet always respond well to a hot salt water bath.

SALT TREATMENTS: A salt water gargle will often relieve mild throat and mouth irritations . . . And your dentist may tell you to use equal parts of salt and baking soda to clean teeth and keep your gums healthy . . . The same combination sweetens breath, too . . . Imitate nature by “making” tears: half a teaspoon of salt in a pint of water is a good eyewash that eases strain and rests eyes.

Laundry Room

SUDS—SETTLER: It’s pretty messy when a washing machine bubbles over, so keep a box of salt in the laundry room to sprinkle on suds that threaten to overflow.

OTHER WASHING AIDS: Remove perspiration stains from washable clothing by soaking in salt water before washing (four tablespoons per quart of water) . . . Brighten hardwater yellowed cottons or linens by boiling for an hour in salt-and-soda water . . . Another secret: Clothes won’t freeze on the line if you add a little salt to the final rinse water . . . Remove many clothing stains (including blood stains) by soaking in cold salt water; launder in warm, soapy water and boil after the wash. Caution: Use only on cottons, linens or other natural fibers that can take high heat.

MILDEW MAGIC: When clothes or household articles mildew, moisten stained spots with a mixture of lemon juice and salt, then spread in the sun for nature’s bleaching. Complete the treatment with a thorough rinse and drying.

Outdoors

PET CARE: Fleas like salt no better than your pet likes fleas. Try “salting” your dog or cat to discourage fleas. Incidentally, a liberal sprinkling of salt in Fido’s doghouse helps chase fleas away.

BRASS CLEANING: Door knobs and other brass trim take on a new gleam when rubbed with a salt paste. Make the “polish” by mixing salt with equal amounts of flour and vinegar. Leave it on an hour or so, then clean with a soft cloth or a brush for hard-to-reach places. Use a soft, dry cloth for final polishing. Works on copper, too.

Bath

The National Rural Electric Cooperative Association concluded the 35th Annual Meeting with adoption of resolutions calling for energy conservation measures, development of nuclear power and a variety of other government actions to meet the nation's energy crisis and improve rural living conditions.

Resolutions

The resolutions include measures seeking:

- Weatherization of homes and buildings, which would save an estimated 30% of the energy now consumed in heating and cooling.

- Establishment of a "domestic energy stamp" program under social service agencies to aid low and fixed income people in meeting rising electric rates. (Sponsored by the North Carolina delegation)

- An end to monopolistic control of energy and fuel supplies by "total energy corporations" and congressional investigation to determine the extent of such practices.

- Vigorous application of antitrust laws to prevent domination of public policies by one or more corporate entities in the fuel industry.

- Reorganization of energy functions in both the congressional and executive branches of government to expedite energy decisions and formation of a comprehensive national energy policy.

- Congressional action to exert more control over regulatory agencies, eliminate unnecessary paperwork andions, streamline functions and make these agencies more responsive.

- Establishment of a national energy corporation patterned after TVA to provide consumers with a "yardstick" measurement of fair costs and prices of all fuels and energies.

- Passage of a surface mining bill with strong standards and controls to assure reclamation of land to a state "at least as aesthetically pleasing and productive as existed prior to mining."

- A national transportation policy to expedite more efficient movement of food, fiber, minerals, raw materials and manufactured goods.

- Research programs to expedite development of alternative fuel sources and power and energy conservation technology.

- Full reinstatement of the 18 water, reclamation and hydroelectric projects recently cut from the federal budget.

An Annual Meeting Is



For the National Rural Electric Cooperative Association, an Annual Meeting is a four-day event bringing together leaders in the rural electric program from across the nation to evaluate the accomplishments of the past year and discuss the problems they face in the year ahead. This year, the 35th Annual Meeting of the organization was held in Atlanta, Feb. 20-24. It attracted nearly 11,000 of those leaders, including hundreds from North Carolina, for business sessions, seminars, awards programs and a parade of noted speakers. These three pages offer a few glimpses of the meeting's highlights.

Two North Carolina Electric Membership Corporations claimed a total of eight awards at the NRECA Annual Meeting in Atlanta, all of them coming in the National Member Services Awards competition.

Six of the eight awards went to Blue Ridge EMC, Lenoir. They included four first-place honors and two second-place finishes.

Awards

The first-place awards were in youth programs (a tie), employee programs, area development programs and member relations work plans.

The second place awards were for research and load control and energy conservations programs (a tie).

Four County EMC, Burgaw, claimed a tie for first place in the category for cooperative newsletters with a circulation of more than 6,500.

The EMC also received the second place award for advertising programs.

Gene Porter, an electric cooperative director from Viola, Kansas, was elected president of NRECA at its 35th Annual Meeting. He had served as vice president for the past two years.

D.L. Knight of Bossier City, La., moved into the vice president's post from that of secretary-treasurer.

Elections

Angus Hastings of Citro, Fla., was elected secretary-treasurer.

Meanwhile, at the 1977 CFC Annual Meeting (see Page 26), J.T. Dudley of Mississippi was elected president of the financing organization.

Owen Manning of Ohio was elected vice president and Clarence Peterson of Minnesota, secretary-treasurer.

The best solution (to the energy crisis)—today and in the long run—is conservation. We can take a new energy source—"conservation energy"—that can reduce our dependence on expensive foreign oil and dwindling domestic supplies.

"Conservation energy" is the energy derived by replacement of wasteful habits and technology with more efficient ones in our daily lives. I believe that the equivalent of about 16 million barrels of oil a day can be "produced" through "conservation energy" by 1985.

Every aspect of American society is going to have to do its part in encouraging consumers to conserve.

There can be a great movement, and you have the chance to be in the lead. Pulling from the grassroots, like you are capable of doing, will build a firm foundation for conservation energy.

So far you have all done a magnificent job of fulfilling the power demands in the rural areas. In fact, only a small percentage of the American population knows what it is like to go without electricity and very few people have ever experienced prolonged balckouts. You are to be commended for such good service.

Charles Percy
U.S. Senator from Illinois



Speakers

Growing up in the South, I've seen how through rural electrification you transformed the lifestyle of this nation, making it possible for us to be a part of the nation as a whole and to give the kind of leadership to the world that perhaps could not have come except from a small town in the rural South. The combination of leadership you see in our president, you might say is a product of rural electrification—his reading habits, his whole lifestyle, the combination of farming and engineering could hardly have happened to a city boy. The discipline that he has developed in his whole personal habit that he now brings to the White House is a product of the changes you helped wrought across this nation. I now see in those changes a potential for the entire world.

I've been criticized because I say I'm not afraid of Communism—that I don't see any great Communist threat or conspiracy around the world and the reason I say that is not because I think there is no military

presence but because everywhere I've been in the last six years I see people asking not for guns—but for the kind of lifestyle that you have helped develop in this nation...the kind of lifestyle that comes when people suddenly are able to have harnessed in their midst the tremendous power of electricity.

I don't care what kind of problem you face in the world today, that problem is going to require some kind of electric power to deal with it.

I hope we can begin to work together through the United Nations development program, through the Agency for International Development bringing electric power to the world, because electric power is light, electric power is hope, electric power is a new future, it's food for hungry people, it's health care of the ill, it's education for those who have been denied, it's really what this country stands for.

Andrew Young
U.S. Ambassador to the
United Nations

Energy conservation must become more than a slogan. It must become a daily habit that every citizen practices. And I urge each of you to take the leadership in your communities in moving American toward this goal. We in rural electrification can be an important force in setting the energy conservation pace nationwide....

Conservation applies to much more than consumer use of energy. Conservation also includes efficient use of our fuel resources. We currently waste 99.3% of our

uranium supplies because light water reactors in use can burn only .7% of the processed uranium and because we have refused to build facilities needed to utilize the other 99.3%, or reprocess and reuse the plutonium which is produced as a waste product by our existing reactors....

During the next decade almost all nuclear



power will come from light water reactors... They are not the long-range answer because their very poor fuel use will rapidly exhaust our uranium resources. There is no way for the U.S. to support a high energy economy and comfortable living standard during the next 25 years without commercializing the breeder reactor.

Robert D. Partridge
Executive Vice President
NRECA

(Continued on page 26)

An Annual Meeting Is (Continued from Page 25)



Noel Lee, Jr. of Edgecombe-Martin EMC, center, participates in a meeting of the NRECA Management Advisory Committee.

An adjunct activity which has been part of the NRECA Annual Meeting for the past eight years is the annual meeting of the National Rural Utilities Cooperative Finance Corporation, popularly known as CFC.

The organization is a venture of the rural electric cooperatives nationwide to provide loans supplementing those of the Rural Electrification Administration for expansion and development of electric co-op systems.

CFC Meeting

At the 1977 CFC meeting, delegates heard reports that the corporation has authorized \$600 million in long-term loans since its inception and \$400 million in line of credit commitments and \$300 million in intermediate-term loans during the first seven months of the 1976-77 fiscal year.

Meanwhile, a North Carolina man was elected chairman of CFC's Finance Committee. He is Cecil Viverette, manager of Blue Ridge EMC, Lenoir, who serves on the CFC Board of Directors, representing District 1.

The three or four days immediately prior to the opening of the 1977 NRECA Annual Meeting were filled with a variety of activity: meetings and conferences by the organization's committees and task forces, an NRECA Board of Directors meeting and one-day management training sessions for cooperative employees.

A number of North Carolinians were involved in these preliminary activities this year, including several who participated in the training sessions.

Comittee Sessions

Noel Lee Jr. of Rt. 3, Washington, a member of the Board of Directors of Edgecombe-Martin EMC, Tarboro, attended the meetings of the NRECA Board of Directors and the Management Advisory Committee. Lee represents North Carolina on the NRECA board.

Other Tar Heels participating in the preliminary meetings were Heyward McKinney, manager of Pee Dee EMC, Wadesboro, Public Relations and Communications; Alton Wall, manager of Randolph EMC, Asheboro, Power Supply; Robert N. Cleveland, general manager of N.C. EMC, Community and Economic Development; Cecil Viverette, manager of Blue Ridge EMC, Lenoir, Power Supply; Mrs. Rose Prevatte of Pembroke, Mrs. Frankie Nicols of Mt. Airy, and Mrs. Barbara Deverick, administrative assistant at Blue Ridge EMC, Women's Task Force; and Mrs. Alice Wilson of Tarboro, Women's Action Standing Committee.

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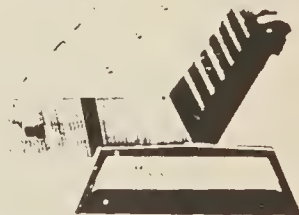
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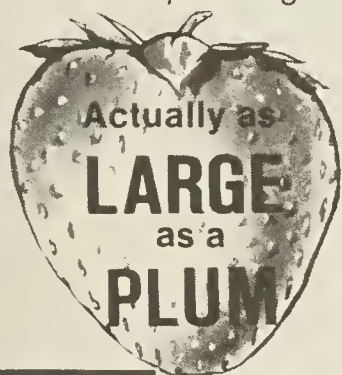
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On Howard's Knob

Blowin' In the Wind

A 150-foot wind monitoring tower is now in operation atop Howard's Knob, overlooking Boone, as part of a one-year test of wind currents by the Energy Research and Development Administration.

Winds of up to 65 miles per hour have already been recorded by the tower's instruments.

The Howard's Knob location is one of 65 sites being considered by the federal agency as suitable for an experimental power-generating windmill. Four such windmills are planned under a federal program to be undertaken during the next two years.

One of the four units has already been assigned to Clayton, N.M. If the Watauga County location is selected for one of the other three sites, a windmill would be erected on Howard's Knob to produce electricity. The power would be channeled into the Blue Ridge Electric Membership Corporation distribution system to serve members' homes in the area.

Maurice Rhodes, director of communications for the EMC, said the windmill would either be a 200-kilowatt unit or a 1,500-kilowatt unit.

"The larger one could serve about 450 homes, while the smaller could serve about 70 homes."

The 200-kw windmills will have blades of 125 feet in diameter and will need 24-mile-per-hour winds to reach its rated power output. The 1,500-kw unit will have blades 200 feet in diameter and will need 20-mph winds to reach its rated output.

The Howard's Knob location was selected for the test after being nominated to ERDA by Blue Ridge EMC.

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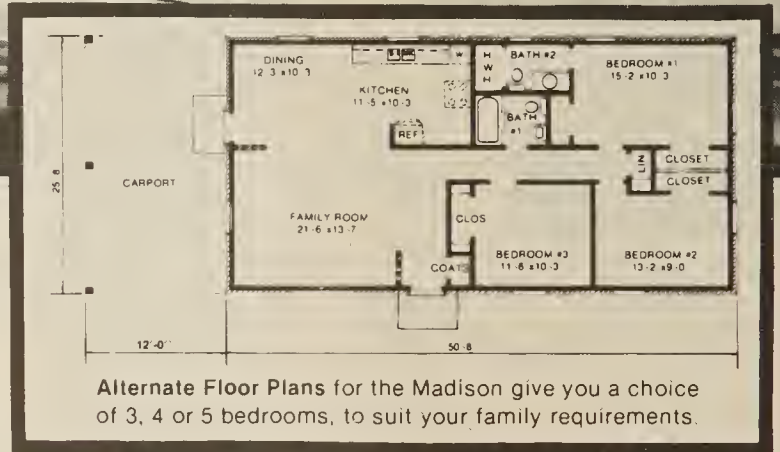
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N.C. EMC Manager To Take Ohio Post

Robert N. Cleveland, executive vice president and general manager of North Carolina Electric Membership Corporation, is resigning to accept a position as executive manager of Ohio Rural Electric Cooperatives, Inc., Buckeye Power, Inc. and the Ohio Rural Electric Supply Cooperative.

The three organizations are, respectively, Ohio electric cooperatives' state association, power generation and transmission agency and materials supply operation.

In his present post, Cleveland oversees all operations of N.C. EMC and its sister corpora-

tion, Tarheel Electric Membership Association, which administers a centralized statewide materials supply program for EMCs.

Cleveland was instrumental in developing the materials supply program, which went into operation in December, 1975. Under that program, electric cooperatives across the state have themselves become members of a cooperative venture for the purchase of poles, transformers, and other hardware materials.

During his tenure, employees of the two state organizations increased from nine to 30, and the entire operation was moved into

the organization's first headquarters building. Since then, an additional building has been leased for warehouse and office space to serve the materials supply program.

Although N.C. EMC has no generation and transmission organization as such, it has a power supply division which is actively involved in negotiations with private power companies on wholesale rates. Under Cleveland's guidance, the division has also been engaged in efforts to purchase generation facilities from the private utilities.

A 51-year-old native of Kentucky, Cleveland came to North Carolina after serving four years as general manager of the Colorado Rural Electric Association.

He has been active in the rural electric program for many years, having been named to the board of directors of Kentucky's Shelby Electric Cooperative Corporation at the age of 21.

He served on that board for 15 years and was concurrently a director of the Kentucky Rural Electric Cooperative Corporation for 10 years. He was president of the Kentucky organization for a year before accepting a full-time position with the organization.

At the Kentucky association, he was director of administrative services from 1961 to 1969, when he resigned to take the Colorado job.

Since joining N.C. EMC, he served as president of the Rural Electric Statewide Managers Association for 1975-76. He is also a member of the Committee on Community and Economic Development for the National Rural Electric Cooperative Association.



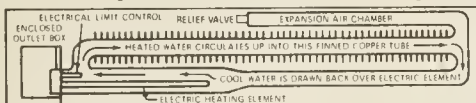
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(For free factory engineered heating layout, just mail sketch or plans of home or room that needs heat or you plan to build.)

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The WILSON 3 Bedrooms, 1,008 Sq. Ft. including Porch.

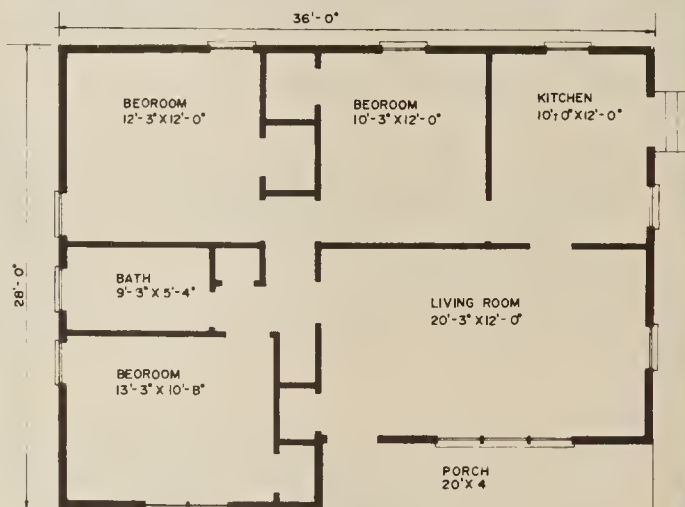
This 1,008 square foot basic home including a 4 foot by 20 foot front porch—for only \$9,995
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CMH SPECIALIZES IN CONSTRUCTION AND FINANCING ALL TYPES OF HOME IMPROVEMENTS

Poet's Corner

Willadean Hall is a member of Crescent EMC, headquartered in Statesville. Even if her cake didn't work, as described below, it sounds as if she has the right recipe for a good rhyme:

Grandmother's Cake

"Tell me how, grandmother," I said.
"That you bake such a scrumptious cake."
"I have no script, it's in my head
It's really no trouble to make."

"Get out a pan, rub it with fat
A big bowl and spoon that won't bend
A pinch of this, a dab of that
Just mix and stir and beat and blend

"This much vanilla, that much milk
Butter and eggs, sugar and flour
Now beat 'til it's as smooth as silk
And bake in oven for an hour."

I tried to do just what she said
I pinched, I poured, I dabbed, I dibbed
The end result that's in my head
Leads me to think grandmother fibbed.



A message to our poets: We want to know more about you. Why not tell us a little about yourself when you send in your entry to "Poet's Corner?" How long have you been writing poetry? Is it a pastime? What other work do you do? Give our readers a chance to find out more about you . . . and maybe, your poetry.

Carolina Country April 1977



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OK! You're long on ambition . . . but short on cash. And they don't put much value on ambition alone. So, they've said "NO" and you probably think there's no way you can have a home of your own now.

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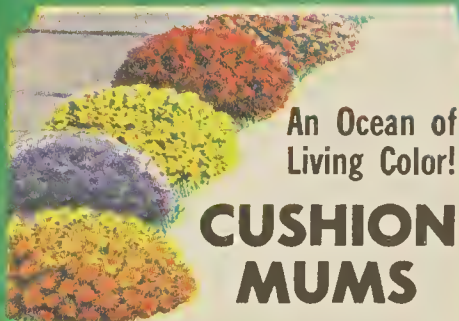
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Genuine Imported Belgium Pendula Begonia

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All-In-One Carefree Ground Cover Chokes Out Stubborn Weeds!

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Transforms slopes, banks, troublesome weedy areas into a dense mat of lacy green foliage drenched with delicate pink and white blooms. Coronella variety—hardy, maintenance free, disease and drought resistant. Blooms June til frost.



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(Dragon's Blood)

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Spreads rapidly in sun or shade, erupts in masses of fiery-red blooms mid-summer to September. Hardy, Michigan nursery grown. Plant 6-12" apart east spreading in rock gardens, areas, or "trouble spots" where won't grow.



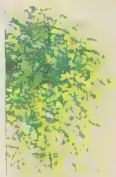
Trailing Ivy-Leafed GERANIUM — \$1.98

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Transforms room, porch, or patio into a flowery haven that is a truly radiant sight. Already growing in 2" peat pots, these extra-double Geraniums tumble down and around the basket in a profusion of startling pink-reddish blooms on glistening ivy-leafed foliage. Mail coupon today!



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— \$2.98

With "water-f" wire-thin, stems bear thousands of hair-like. Thrives under poor ons.

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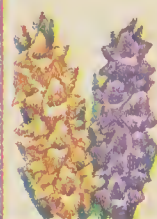
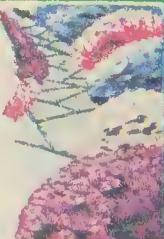
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Everbearing, grow 4-5 ft. high, pick without bending over! Ideal for freezer, canning, pies, eating fresh. Produces sweet, tasty berries!

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